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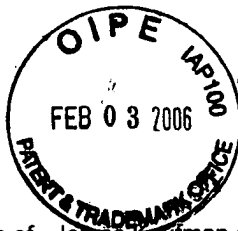
*Docket No.* __ARC920010089US1__
*(PATENT)*

SIR:

Transmitted herewith for filing in the Application of    James Kaufman et al.
Serial No.:      10/034,523

Title:    **SYSTEM AND METHOD FOR HIERARCHICAL SEGMENTATION WITH LATENT SEMANTIC INDEXING IN SCALE SPACE**

are the following:

Change of Correspondence
Formal drawing sheet
Amendment after Final Rejection
Response/Amendment
Response to Restriction Requirement
Letter to Drawing Review Branch
Certificate of Correction
Other : *Recordation of Assignment Cover Sheet* ✔

Information Disclosure Statement
Declaration and Power of Attorney
Assignment of the Invention ($40.00)
Notice to File Missing Parts ($130.00)
 Petition for Extension of Time ($450.00)
Issue Fee ($1,290.00)
Notice of Appeal ($500.00)
Appeal Brief ($500.00)

*NO ADDITIONAL FEE IS REQUIRED*

| OTHER THAN A SMALL ENTITY | Claims Remaining After Amendment | Highest No. Previously Paid for | Extra | Rate | Additional Fee |
|---|---|---|---|---|---|
| SUBTOTAL FROM ABOVE | | | | | $500.00 |
| TOTAL CLAIMS | | | 0 | × 18 = | |
| INDEPENDENT CLAIMS | | | 0 | × 84 = | |
| MULTIPLE DEP. CLAIM PRESENTED | | | | +280 = | |
| | | | | TOTAL | $ 500.00 |

✔    Please charge my Deposit Account No. __09-0441__ in the amount of __$500.00__ . A duplicate copy of this sheet is attached.

✔    The Commissioner is hereby authorized to charge payment for any additional filing fees required under 37 CFR 1.16 or any patent application processing fees under 37 CFR 1.17 in association with this communication or credit any overpayment to Deposit Account No. __09-0441__ . A duplicate copy of this sheet is attached.

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I hereby certify that the above paper/fee is being deposited with the United States Postal Service as first class mail in an envelope addressed with sufficient postage to Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

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Person mailing paper/fee:  Marc D. McSwain

Signature  *Marc D. McSwain*

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<u>PATENT</u>

# IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of      :      January 29, 2006

James Kaufman et al.

Group Art Unit: 2178      :      Examiner: Kyle R. Stork

Serial No.: 10/034,523      :      Filed: 12/28/2001

Attorney Docket: ARC920010089US1      :      Confirmation No.: 1662

Title: SYSTEM AND METHOD FOR HIERARCHICAL SEGMENTATION WITH LATENT SEMANTIC INDEXING IN SCALE SPACE

## <u>APPEAL BRIEF</u>

Commissioner of Patents and Trademarks

Sir:

This brief is submitted under 35 U.S.C. 134 and is in accordance with 37 C.F.R. Parts 1, 5, 10, 11, and 41, effective September 13, 2004 and published at 60 Fed. Reg. 155 (August 2004). This brief is further to Appellant's Notice of Appeal previously filed.

### Table of Contents

**(1) Real Party in Interest**

The real party in interest is the IBM Corporation.

**(2) Related Appeals/Interferences**

No other appeals or interferences exist which relate to the present application or appeal.

**(3) Status of Claims**

Claims 1, 10, 15, and 17-18 are pending and finally rejected; claims 2-9, 11-14, and 16 are canceled.

**(4) Status of Amendments**

No amendments are outstanding.

**(5) Summary of Claimed Subject Matter**

As an initial matter, it is noted that according to the Patent Office, the concise explanations under this section are for Board convenience, and do not supersede what the claims actually state, 69 Fed. Reg. 155 (August 2004), see page 49976. Accordingly, nothing in this Section should be construed as an estoppel that limits the actual claim language.

Claim 1 teaches a computer-implemented method for generating a table of contents for a document using information in the document, comprising building a model of the document including an initial semantic structure, then detecting

hierarchical changes in the semantic structure spanning different scales (page 6 lines 4-11), and finally ordering the changes into entries in the table of contents based on scale span (page 6 lines 15-19). Claims 17 and 18 are substantially identical, differing only in form (e.g. claim 17 is a system claim, and claim 18 is a computer program product claim).

Dependent claim 10 teaches that the building further comprises defining a vector of terms occurring in the document, then mapping the document into a vector space by projecting scaled term occurrence histogram data onto the vector of terms (page 5, lines 10-17) and finally summarizing the terms using singular-value decomposition (page 5 lines 17-19).

Dependent claim 15 teaches that the detecting further comprises applying successively smaller scale filter windows to the model according to the initial semantic structure to construct a map of said changes versus scale (page 17 lines 18-21), identifying local peaks in the map where the peaks are points of maximum vector derivative magnitude (Figure 4A), then tracing the local peaks back to a semantic structure change origin point (page 17 lines 16-18), and finally measuring a span of scales over which each said change exists.

(6) Grounds of Rejection to be Reviewed on Appeal

(a) Claims 1 and 17-18 have been rejected under 35 U.S.C. 102(b) as being anticipated by USPN 5,550,965 to Gabbe et al. (hereafter "Gabbe").

(b) Claim 10 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Gabbe further in view of USPN 5,956,026 to Ratakonda (hereafter "Ratakonda") further in view of USPN 5,455,806 to Hutson (hereafter "Hutson").

(c) Claim 15 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Gabbe in view of USPN 5,996,415 to Stanke (hereafter "Stanke").

(7) Argument

As an initial matter, it is noted that according to the Patent Office, a new ground of rejection in an examiner's answer should be "rare" and should be levied only in response to such things as newly presented arguments by Applicant or to address a claim that the examiner previously failed to address, 69 Fed. Reg. 155 (August 2004), see, e.g., pages 499963 and 49980. Furthermore, a new ground of rejection must be approved by the Technology Center Director or designee and in any case must come accompanied with the initials of the conferees of the appeal conference, id., page 49979.

Appellant notes that the primary examiner signed off on the final rejections. Accordingly it is not expected that reopening of prosecution will occur, since the primary examiner has already had the chance to consider the gravamen of the arguments below and has rejected them.

(a) Claims 1 and 17-18 are rejected as anticipated by Gabbe. However, Gabbe fails to teach every element of the present invention, which is required for a proper anticipation rejection. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior

art reference." Verdegaal Bros. V. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Remarks below regarding Gabbe also apply to the obviousness rejections discussed below.

Claims 1 and 17-18 are independent claims and each recite elements not found in Gabbe. The dependent claims similarly recite elements not found in Gabbe, or, in the case of the obviousness rejections discussed below, recite elements neither taught nor suggested by the cited prior art. Gabbe fails to teach detecting hierarchical changes in the semantic structure of a document model. Column 8 lines 35-67 of Gabbe cited teach only the filtering of event data (e.g. the press of a mouse button on the graphical user interface). Column 10 line 55 to column 11 line 20 of Gabbe cited fails to teach ordering changes into entries in a table of contents based on scale span.

(b) Claim 10 is rejected as unpatentable over Gabbe further in view of Ratakonda further in view of Hutson. The cited prior art references do not, either separately or in combination, teach or suggest the claimed features of the present invention. Ratakonda and Gabbe neither (separately or in combination) teach nor suggest the use of singular-value decomposition in combination with projection of scaled term occurrence histogram data onto a vector of terms occurring in a document. Regarding the broader concepts of the invention, Ratakonda actually teaches away from the present invention in column 9 lines 30-55 and column10 lines 64-67. Ratakonda describes that a viewer may start at a coarse level of detail and expand the detail with a mouse click at those parts of a video file that are more interesting to the viewer. Similarly, by moving from finer detail to more coarse detail, Ratakonda teaches replacement of a number of keyframes by a single keyframe. However, only

upon manual selection are the indexing schemes of Ratakonda triggered. Ratakonda neither teaches nor suggests the use of singular-value decomposition to resolve difficulties in implementing a system like that taught and claimed by the present invention; in contrast see for example page 5 lines 17-19 of the specification. In fact, Ratakonda neither teaches nor suggests singular-value decomposition at all. Instead, Ratakonda defends the scheme just described by asserting "Further, it is much more efficient to utilize the proposed hierarchical approach than applying the baseline algorithm multiple times to obtain different numbers of keyframes to generate a multi-level summary." (column 10 lines 64-67). This assertion indicates that it would not have been obvious to one of ordinary skill in the art to have considered the use of singular-value decomposition to solve the problem solved by the present invention in a computationally practical manner through the combination of steps claimed. A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984)

Having dispatched Ratakonda, though the rejection evidently still relies on Ratakonda, Appellants are now informed in the Advisory Action that Hutson teaches the use of single-value decomposition, citing column 17 line 30 to column 18 line 10 describing a sonar system. However, the sole reason proffered for the proposed combination is that "it would have allowed a user to summarize a decomposition using a single-value decomposition in order to take advantage of an efficient mathematical tool for analyzing data." Mere untaught possibilities are insufficient to defeat patentability.

(c) Claim 15 is rejected as unpatentable over Gabbe in view of Stanke. Stanke is a semiconductor wafer characterization system that is not generally related to the present invention, and is not analogous art. Stanke performs peak detection on acoustic waveforms and separates multiple signals with a fixed set of filters (column 19 lines 1-5). Gabbe and Stanke neither (separately or in combination) teach nor suggest (a) applying successively smaller scale filter windows to a document model to construct a map of changes in semantic structure versus scale, (b) tracing identified local peaks back to a semantic structure change origin point, or (c) measuring a span of scales over which each said change exists, as taught and claimed in the present invention. In contrast, see for example page 6 lines 4-20 of the specification. Thus, the cited prior art references do not, either separately or in combination, teach or suggest the claimed features of the present invention.

In the Advisory Action, the Examiner asserts that Stanke describes progressive filtration involving the identification of peaks (column 18 line 55 to column 19 line 10). That is inaccurate; Stanke performs repeated filtering, but not "progressive" filtering in the sense of applying successively smaller scale filter windows to a document model to construct a map of changes in semantic structure versus scale. The sole reason proffered for the proposed combination is that it would have been obvious to "use progressive filtration with peaks in the manner of Stanke because it results in a very compact representation of the information." That is a non-sequitur, as the purpose of tracing the identified peaks is to measure a span of scales over which change exists in order to build a table of contents, a completely different use than of Stanke. No reference-specific analysis of why it would be obvious to combine the secondary

reference with the very different primary reference has been offered, as the relied-upon suggestion in the secondary reference simply does not relate to the primary reference.  Since almost every patent extols its virtues in a vacuum, the fundamental *sine qua non* of patentability - the requisite prior art suggestion to combine - would be eviscerated should the present prima facie case for obviousness be accorded legitimacy.

For the reasons advanced above, it appears that the rejected claims are patentable, thus the rejections merit reversal.

Respectfully submitted,

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1. A computer-implemented method for generating a table of contents for a document using information in said document, comprising:

      building a model of said document including an initial semantic structure;

      detecting hierarchical changes in said semantic structure spanning different scales; and

      ordering said changes into entries in said table of contents based on scale span.

10. The method of claim 1 wherein said building further comprises:

      defining a vector of terms occurring in said document; and

      mapping said document into a vector space by projecting scaled term occurrence histogram data onto said vector of terms and summarizing said terms using singular-value decomposition.

15. The method of claim 1 wherein said detecting further comprises:

      applying successively smaller scale filter windows to said model according to said initial semantic structure to construct a map of said changes versus scale;

      identifying local peaks in said contour map, said peaks being points of maximum vector derivative magnitude;

      tracing said local peaks back to a semantic structure change origin point; and

      measuring a span of scales over which each said change exists.

17.  A system for generating a table of contents for a document using information in said document, comprising:

      means for building a model of said document including an initial semantic structure;

      means for detecting hierarchical changes in said semantic structure spanning different scales; and

      means for ordering said changes into entries in said table of contents based on scale span.

18.  A computer program product comprising a machine-readable medium tangibly embodying computer-executable program instructions thereon for generating a table of contents for a document using information in said document, including:

      a first code means for building a model of said document including an initial semantic structure;

      a second code means for detecting hierarchical changes in said semantic structure spanning different scales; and

      a third code means for ordering said changes into entries in said table of contents based on scale span.

# APPENDIX B - EVIDENCE

**None (this sheet made necessary by 69 Fed. Reg. 155 (August 2004), page 49978).**

# APPENDIX C - RELATED PROCEEDINGS

**None (this sheet made necessary by 69 Fed. Reg. 155 (August 2004), page 49978).**